

CLAIMS:

1. A molecular stamp for printing biomolecules onto a substrate comprising a hydrophilic polymeric gel and a patterned surface, characterized in that the gel has at least 20 % crosslink density.
- 5 2. The molecular stamp of claim 1 wherein the gel is obtainable by polymerizing at least one of a water soluble ethylenically unsaturated and/or epoxidated monomer containing at least one functional group selected from a hydroxy, alkoxy, amine, alkyl substituted amine, carboxylate, carboxylic ester, carboxylic anhydride, carboxamide, carbamate, urethane, and urea group, in the presence of a polymerization initiator and
10 optionally a chain transfer agent, and crosslinking the polymer with a crosslinker having at least two ethylenically unsaturated groups and/or epoxy groups.
3. The molecular stamp of claim 1 or 2 wherein the monomer is a hydroxyalkyl(meth)acrylate and the crosslinker is a polyethyleneglycol di(meth)acrylate.
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4. The molecular stamp of any one of claims 1 to 3 wherein the stamp is self-supporting.
5. The molecular stamp of any one of claims 1 to 4 wherein the crosslink density
20 is at least 40 %.
6. The molecular stamp of any one of claims 1 to 4 wherein the polymer concentration is at least 50 %.
- 25 7. A method for preparing the stamp of any one of claims 1-6 comprising:
 - polymerizing at least one of a water soluble ethylenically unsaturated and/or epoxidated monomer containing at least one functional group selected from a hydroxy, alkoxy, amine, alkyl substituted amine, carboxylate, carboxylic ester, carboxamide, anhydride, urethane, and urea group, in the presence of a polymerization initiator and optionally a

chain transfer agent, and

- crosslinking the polymer with a crosslinker having at least two ethylenically unsaturated groups and/or epoxy groups to a crosslinked polymer with a crosslink density of at least 20 %.

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8. A method of printing biomolecules onto a substrate, preferably a gold substrate, comprising the steps:

- optionally swelling the stamp of any one of claims 1-6 with water or buffer
 - loading a biomolecule onto the surface of the stamp by contacting the patterned surface
- 10 of the stamp with the biomolecule,
- optionally rinsing the surface with water or a buffer and/or drying the stamp, and
 - bringing the surface of the stamp with the adsorbed biomolecule into contact with a substrate followed by transferring the biomolecule from the stamp to the substrate.